

A Standard for Pottery Studies in Archaeology

Prehistoric Ceramics Research Group
Study Group for Roman Pottery
Medieval Pottery Research Group



Produced by:

Prehistoric Ceramics Research Group

Study Group for Roman Pottery

Medieval Pottery Research Group

Funded by [Historic England](#)



Funded by
Historic England



Pottery is one of the most common artefacts recovered from archaeological excavations, mainly because it usually does not decay as easily as artefacts made of other materials. Although it is widely regarded as a reliable tool for dating, pottery is significant as evidence for technology, tradition, modes of distribution, patterns of consumption and site formation processes. It is unfortunately all too common for a pottery specialist to be given bags of poorly processed ceramics and asked simply to date them and write a report. When simple, basic tasks have not been carried out, and the true value of an assemblage has not been understood, the potential for missing important information is too great. With that in mind, this standard takes the reader through the various stages of an archaeological project, from planning and data collection through to report writing and archiving, with the intention of informing not only pottery specialists but also those who manage and monitor projects.

'Specialist' is the most important term used throughout the Standard and it cannot be emphasised enough how vital it is that someone of appropriate competence and understanding of the subject is engaged to advise on and undertake pottery work.

This document was compiled by the three period-specific pottery study groups (PCRG, SGRP, MPRG) with the aim of creating the first, comprehensive, inclusive standard for working with pottery. The Standard is intended for use in all types of archaeological project, including those run by community groups, professional contractors and research institutions.

This standard has been published by the Medieval Pottery Research Group on behalf of the Prehistoric Ceramics Research Group, the Study Group for Roman Pottery and the Medieval Pottery Research Group.

The text was written by Alistair Barclay and David Knight (PCRG); Paul Booth and Jane Evans (SGRP); Duncan H. Brown and Imogen Wood (MPRG).

Development and production of this standard was funded by grant-aid from Historic England.

Photographs are reproduced with kind permission of Derek Hall, archaeologist and ceramic specialist (page 24); Albion Archaeology (page 29); Duncan Brown (page 32).

First published June 2016

ISBN 0 9506105 9 3

Design and layout by Maria Geals

Contents

Section 1	INTRODUCTION	1
1.1	AIMS	1
1.2	DEFINITIONS	1
1.3	USING THE STANDARD	2
1.4	STRUCTURE	2
1.5	PROJECT TASKS	3
Section 2	THE STANDARD	5
2.1	PROJECT PLANNING	5
2.2	COLLECTION AND PROCESSING	7
2.3	ASSESSMENT	9
2.4	ANALYSIS	11
2.5	REPORTING	15
2.6	ARCHIVE	17
Section 3	GLOSSARY OF TERMS	20
Section 4	REFERENCES	22
Section 5	ACKNOWLEDGEMENTS	24
Appendix 1	APPROACHES TO ANALYSIS	25
Appendix 2	APPROACHES TO REPORTING	30

1 INTRODUCTION

Pottery has several attributes that lend it great potential to inform the study of human activity in the past. The material a pot is made from, known to specialists as the *fabric*, consists of clay and inclusions that can be identified to locate the site at which a pot was made, as well as indicate techniques of manufacture and date. In addition, the overall shape of a pot, known as the *form*, the character of component parts such as rims and handles, the technique and style of decoration and aspects of surface treatment, can all indicate when and how a pot was made and used, as well as serving to define cultural affinities.

The interpretation of pottery is based on a detailed characterisation of the types present in any group, supported by rigorous quantification and consistent approaches to analysis that facilitate comparison between assemblages. This will lead to an understanding of the progress of technology, methods and patterns of distribution, modes of consumption and processes of deposition. Those conclusions will go on to inform an understanding of the people who occupied an archaeological site, including their social, economic and cultural circumstances and the ways in which they interacted with material culture, as well as the chronology of the activities represented by the surviving evidence.

If the study of pottery is to reach its full potential, it is vital that it is recovered and analysed to a high standard. This document covers the entire process of pottery work in archaeology, ensuring that the information gained will inform present and future studies of the past.

1.1 AIMS

The aims of the Standard are to:

- set out accepted methods for working with pottery assemblages
- ensure pottery assemblages from all types of archaeological project are recovered and analysed consistently, with the aim of producing the best possible levels of information to allow detailed and informed interpretations
- facilitate the monitoring of project planning, finds recovery, pottery analysis and reporting
- inform the staffing of project teams, so that recognised, competent pottery specialists are included
- assist in archive compilation and curation in relation to pottery assemblages.

1.2 DEFINITIONS

Pottery is defined as vessels made of fired clay, complete or fragmented.

Some fired clay objects, such as roof furniture (eg finials or louvers), may be studied by pottery specialists and in such instances the Standard may be applicable. Other objects, such as loom-weights, bricks and tiles, are excluded from the Standard because they require different analytical approaches and are studied by different specialists.

A pottery specialist is defined as an individual who is competent in, and specialises in, characterising, quantifying, analysing, interpreting and reporting on pottery assemblages.

A pottery specialist will have developed expertise through the extensive study of pottery, and reporting in reputable, peer reviewed sources, with a demonstrable ability to work unsupervised. Membership of a pottery study group is a valuable way of acquiring and sharing knowledge, while formal accreditation and recognition of competence can be gained through membership of ClfA. Both are recommended.

An archaeological project is defined as *any programme of work that involves the collection and/or production of information about an archaeological site, assemblage or object in any environment, including in the field, under water, at a desk or in a laboratory* (Perrin et al, 2014).

1.3 USING THE STANDARD

The Standard can be applied by anyone working with a pottery assemblage. It is beyond the remit of the pottery study groups to enforce compliance but the Standard should be recognised as a statement of the best way to approach all aspects of pottery work. Use of the Standard will ensure that those practising the study of pottery will provide data that enables the comparative study of different assemblages. At a high level, the ClfA Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (ClfA 2014a) sets a level for professionalism that must be followed. This Standard for pottery studies supports that in providing greater detail on the approach and methodologies required to achieve best practice.

It is intended that the Standard is used in the following ways:

- by pottery specialists working on assemblages from any type of archaeological project, with the intention of ensuring that pottery is collected, processed, recorded, analysed and reported on to consistent levels
- project managers, or anyone managing the processing and analysis of a pottery assemblage, should require finds personnel and pottery specialists to apply the Standard throughout an archaeological project, including the analysis and re-interpretation of pottery studied previously and now in storage, for instance in a museum collection
- to monitor the quality of pottery assessment, analysis and reporting, for example in peer review, or development control archaeologists overseeing planning led projects, or museum curators receiving project archives
- in combination with existing standards for processing, recording and reporting of other types of finds or with standards for the compilation and transfer of archive materials.

1.4 STRUCTURE

All parts of an archaeological project are covered and the Standard is set out in accordance with the main project activities, in the following sections:

PROJECT PLANNING
COLLECTION
ASSESSMENT
ANALYSIS
REPORTING
ARCHIVE

The Standard is supported by a glossary of terms used and two appendices that provide more methodological detail.

1.5 PROJECT TASKS

1.5.1 Project planning

All archaeological projects, including the re-analysis of pottery in curated collections, should be supported by a project design. Where the recovery and/or analysis of pottery is anticipated it is important to follow the points set out in the Standard, the purpose of which is to ensure that pottery work is properly resourced and carried out by appropriately experienced personnel with clear aims and objectives.

Project planning should usually involve the production of a project proposal or brief, which sets out the context, aims and purpose of the intended project. In development control terms, this is a project brief. The brief, or proposal, is followed by a project design, or in contract archaeology terms, written scheme of investigation (WSI), which describes the methodology to be followed, strategies for recovery, sampling and selection, the resources required and a timetable for completion.

1.5.2 Collection and processing

The collection of pottery during fieldwork must be carried out in accordance with the methods and strategies set out in the project design. These may be modified in response to specific circumstances, such as the discovery of special deposits such as graves, or unexpected dumps of large amounts of kiln waste. It is essential to consult with a pottery specialist during fieldwork if changes to collection methods or strategies are being considered.

It is important to consult with a specialist during fieldwork to inform the collection of specimens for scientific analysis, such as sherds that have carbonised deposits that may be radiocarbon dated, or food residues that can be subject to lipid analysis. Such finds will require particular approaches to cleaning and packing.

Productive communication between the investigator and the pottery specialist is key, and their shared purpose must be to ensure that any alterations in collection and/or processing strategies continue to guarantee that the maximum potential of the pottery assemblage can be achieved.

The overall aim of collection and processing must be to produce a comprehensive, stable, well-ordered, pottery assemblage that can be easily accessed and analysed by specialists that are involved in the project, as well as others that may conduct subsequent research.

1.5.3 Assessment

Assessment is an intermediate stage between excavation and analysis/reporting, and is applicable to all aspects of an archaeological project (ie in the context of excavation, applied to artefacts and environmental data as well as the contextual record). Several approaches to assessment are currently possible, ranging from extensive work to much more abbreviated procedures. The Standard sets out an approach to assessment that delivers a level of information sufficient to produce an initial report.

The fundamental purposes of assessment are to provide sufficient information:

- to determine the requirements for further work on the pottery assemblage and accurately estimate the resources required
- about the pottery (usually, in particular, dating evidence) to facilitate other aspects of project assessment or analysis.

In all cases, the approach adopted must be related to and consistent with the overall research aims of the project. A key consideration is the relationship between work undertaken for assessment and the likely level of further work – from a ceramic point of view the latter can often be judged even before the formal setting out of research aims in the assessment report or updated project design.

Assessment must consider all the pottery in the assemblage, including unstratified material.

1.5.4 Analysis

The main aim of analysis is to provide a comprehensive record of a pottery assemblage as appropriate for its size, character and contextual integrity, in accordance with the recommendations made during assessment and the aims and objectives stated in the project design and post-excavation methodology.

Analysis consists of the characterisation and quantification of an assemblage for the purposes of interpretation and reporting. Attributes to be recorded include fabric and vessel type, the form of component parts, sherd type, sherd thickness, decoration, surface treatment, vessel size, source, method of manufacture, evidence for use and condition (see Appendix 1).

All defined categories present in each contextual unit must be quantified in accordance with the Standard.

Analysis must be carried out by, or under the supervision of, an experienced pottery specialist, as defined in 1.2.

Pieces may also be selected for illustration and scientific analysis, eg for fabric characterisation, residue analysis or dating.

Analysis will usually lead to the creation of a specialist report on the pottery assemblage.

Appendix 1 provides further detail on approaches to analysis specified in the Standard.

1.5.5 Reporting

A pottery report brings together all the strands of evidence gathered up to that point. The overall aim is to describe the assemblage, present the data collected during analysis, set out how those data have been interpreted and relate the evidence to such things as interpretations of the pottery assemblage, the evidence of other finds, the structural evidence of the site and the character of the site as a whole, eg as a dwelling, industrial site or shipwreck.

Adopting consistent methods of presentation, eg in the composition of data tables and illustrations, facilitates the comparison of different reports.

Appendix 2 provides further detail on approaches to reporting specified in the Standard.

1.5.6 Archive

Every archaeological project must aim to produce a stable, ordered, accessible archive and transfer it to a curated collection for long-term storage and access. Personnel who are engaged in the recovery, processing, assessment, recording, analysis and/or reporting of pottery assemblages must ensure that the archival integrity of the material is maintained, in accordance with national and local standards and the requirements of the project. That applies equally to digital and documentary material as well as the pottery and associated specimens (eg thin-sections).

2 THE STANDARD

2.1 PROJECT PLANNING

2.1.1 During project planning, the project executive must:

- a. reference sites or pottery assemblages previously recovered from within or close to the project location that will inform the planned project
- b. require the use of recognised standards (ie this document) for all tasks related to pottery.

2.1.2 During project planning the project manager must:

- a. identify and contact an appropriately experienced pottery specialist to join the project team; more than one specialist may be required for multi-period projects
- b. ensure that provision is made for the pottery specialist to familiarise themselves with the character, date, quantity and distribution of pottery previously retrieved from the project area
- c. consult with the identified pottery specialist to develop a strategy for the collection, sampling, selection, recording, processing and analysis of the pottery assemblage
- d. consider the application of scientific techniques such as petrographic or chemical analysis of fabrics, organic residue analysis and radiocarbon dating; using these techniques will require specific collection methods for samples and the involvement of different specialists
- e. ensure that, where several pottery specialists are likely to be required, effective communications are established between them to ensure that information and interpretations may be exchanged; effective communication is also required between pottery analysts and other finds specialists
- f. identify the repository that will receive the project archive, in accordance with recognised archive standards. A copy of the archive compilation and transfer standards required by the repository must be obtained and understood in order to inform the management and treatment of pottery assemblages during recovery, analysis and archiving. This may include how to clean, mark or label, package and box pottery, as well as the management of the documentary archive.

2.1.3 A project design or written scheme of investigation (WSI) must include:

- a. details for adequate resourcing (in terms of time, budget, facilities and equipment) of the pottery specialist for recording, analysis and reporting; site visits by the pottery specialist, attendance at project meetings and visits to pottery type series and comparative collections and assemblages, may also be required
- b. the types of scientific applications likely to be used and how they will be resourced
- c. a strategy for excavating buried features; from a pottery research point of view, it is best to excavate 100% of all features but this may not always be appropriate (for instance with long linear features). Any such strategy will affect the quantity of pottery collected for analysis and the pottery specialist should be consulted during its formulation to ensure that it reflects properly the potential of the project with regard to the pottery research aims.

- d. a strategy for pottery recovery on site; the standard requirement is to recover for analysis 100% of the pottery present in every contextual unit (eg fieldwalking grid square, excavated deposit or structural feature). Any collection strategy based on recovering less than 100% of the pottery present (for instance in large industrial dumps of wasters) must be developed by the relevant project personnel, including the project executive, the pottery specialist and the repository curator, following specialist assessment of the significance of the material.
- e. an archive selection strategy for all recovered material, in accordance with the requirements of the project archive repository and based on advice from the pottery specialist. The aim is to compile a project archive that includes all material with potential to inform future research and other enquiries. It is recommended that all stratified material be retained in the archive although in very large assemblages, such as those from pottery production sites, it is recognised that this is unrealistic. It should also be recognised that some assemblages will contain material that may not seem relevant to the aims of the project but could be of interest to pottery researchers, such as locally made 19th or 20th century pots bearing the names of local traders. Selection strategies must therefore be agreed between the project executive, the project manager, appropriate specialists and the repository curator.
- f. a Data Management Plan (DMP) that sets out procedures for making digital material secure and accessible. Almost every archaeological project produces digital material and it is important that this is managed effectively to ensure its security and accessibility. Pottery analysis is often conducted by specialists working outside the organisation managing the project, often in a freelance capacity. Specialists must be included in the DMP and required to follow protocols for backing up, file naming, structure and format. The DMP should also identify the Trusted Digital Repository that will curate the project digital archive. The standards required by the repository must be referenced in the DMP and all external specialists must be made aware of them.
- g. reference to the requirement to publish or otherwise disseminate and the likely resources needed
- h. reference to the potential costs of conservation, packing and transfer into curation of the pottery, given that at this stage the size and character of the assemblage will not be known
- i. the procedure for obtaining transfer of title, as appropriate. Where the landowner has ownership of archaeological finds (in England, Northern Ireland and Wales but not in Scotland, where all archaeological finds belong to the Crown), transfer of all finds recovered during a project can only take place with transfer of title from the landowner to the repository. It is best if a direct transfer can be arranged at the earliest possible stage, but this could also be managed by the project managing organisation taking temporary ownership between fieldwork and archive transfer. In Scotland the requirements of the Treasure Trove Panel must be referenced and understood (<http://www.treasuretrovescotland.co.uk>).

2.1.4 The nominated pottery specialist must have appropriate period and regional experience and should advise the project manager with the aim of ensuring that:

- a. discussions of project-specific strategies and the potential of the pottery assemblage take into account regional, subject and period research frameworks, with particular reference to those developed by the [Prehistoric Ceramics Research Group](#) (PCRG), [Study Group for Roman Pottery](#) (SGRP), and the [Medieval Pottery Research Group](#) (MPRG)
- b. the project team considers strategies for maximising the potential of the pottery assemblage for elucidating site-specific and wider research questions; these could include, for example, the examination of site formation processes, the use of organic residue analysis to establish the functions of vessels or the characterisation of pottery fabrics to explore patterns of local, regional, national and international production and distribution and use
- c. full consideration is given by the project team to the particular problems that may be encountered with ceramic assemblages from sites of particular date and in different areas,

and the potential implications of this for the excavation strategy; an example of this is the regional variability in the abundance of Neolithic and earlier Bronze Age domestic pottery, which on many sites in Britain is poorly represented in the archaeological record; on many sites of this period, therefore, 100% excavation of feature fills may be essential to ensure assemblages of sufficient size to permit useful quantitative analysis

- d. the project design provides for consultation with relevant national, regional and site-based pottery type series; it is crucial that existing type series and their associated terminology are followed, as this will facilitate future comparative studies of assemblages and sites.
- e. the project design specifies that existing standards for pottery work are applied
- f. provision is made for comprehensive characterisation, quantification and reporting of all or part of the pottery assemblage in accordance with existing standards for pottery work
- g. the project design includes provision for the application of scientific analytical techniques, such as thin-section analysis, as appropriate.

2.2 COLLECTION AND PROCESSING

This section sets out requirements for collection during fieldwork and the preparation of finds for storage. The aim is to compile a stable, clean, ordered and documented assemblage suitable for analysis and comprising 100% of all the pottery found in every contextual unit (see 2.1.3).

Pottery assemblages may be recovered during most forms of intrusive archaeology project, including land surface or seabed collection, watching brief, evaluation and excavation.

All the pottery found in every contextual unit must be collected in accordance with the strategies agreed during project planning. Unexpected finds, such as waster dumps, may lead to the modification of strategies for collection, sampling or selection. Amendments should take place following discussions with the personnel who developed the strategies at the outset, which would normally include the project executive, the project manager, the pottery specialists and the repository curator.

During fieldwork it is desirable to maintain contact with the pottery specialists, to arrange site visits and to organise pottery scans to help inform work on site, collection and sampling strategies and to develop post-fieldwork methods. A visit from a pottery specialist could also provide an indication of chronology, identify special deposits and highlight potential problems of redeposition.

2.2.1 Collection

1. It is essential that all the pottery found in every contextual unit is recovered. One hundred per cent collection will prevent any bias in the record and misinterpretation of the material.
2. Review and modify recovery techniques, especially during excavation. The excavator must be able to modify the collection strategy if special deposits are encountered. These include primary deposition of complete (or substantially complete) vessels, pottery associated with specific features such as graves or entrance ways and votive or structured deposits.
3. Modifications to the collection strategy could include:
 - the extension of the excavated area to determine the extent of special deposits
 - the excavation of complete pits, rather than a portion
 - the use of sieving to recover as many finds as possible
 - recording pottery in situ, including on drawn plans, photography and in 3D; sherds from crushed vessels should be numbered and bagged individually, to aid post-investigation reconstruction, refit analysis and interpretation.
4. Appropriately appointed, secure facilities and equipment for the cleaning, marking, labelling, documenting and packing of finds must be provided if these tasks are to take place on site.

5. There must be suitable materials for the packing, stabilisation and lifting of fragile finds such as complete vessels or crushed pots.
6. Material recovered by sieving must be labelled appropriately.
7. Contact details for trained conservators to manage the packing, stabilisation and lifting of fragile finds must be available.
8. Review and modify the archive selection strategy as appropriate, ensuring that the requirements of the pottery specialist and the repository curator continue to be met.
9. Establish procedures for the secure transport of finds off site, if processing is to take place elsewhere.

2.2.2 Processing

Before examination of the pottery can take place, all material recovered must be cleaned, marked or labelled and packed in accordance with current standards for best practice (eg Watkinson and Neal 1999). If necessary, consult a pottery specialist for advice.

Cleaning

1. Most well-fired pottery can be washed in clean, lukewarm water, gently using a soft brush (a new toothbrush or nailbrush with no rubber bristles) or fingers to remove soil from fractured surfaces.
2. All surfaces must be carefully cleaned, including the edges of sherds.
3. If the pottery looks as if it would be vulnerable to normal cleaning methods, use fingers to assess its stability. If, after gentle wiping, the surface comes away, pottery must be left to air dry, or a trained conservator employed to carry out cleaning.
4. Friable or fragile pottery should be air dried prior to dry cleaning with a soft brush; do not wash.
5. Especially delicate sherds should be cleaned by a trained conservator.
6. Pottery with surface or absorbed residues, burnt deposits or soot, that has been selected for analysis may be air dried but not brushed, washed or overly handled before being wrapped in tinfoil.
7. Pottery should be left to dry thoroughly before being bagged in clean, dry bags or before any further work is carried out.
8. It is not necessary for friable pottery to be consolidated with agents such as diluted PVA, unless it is at great risk and has not been selected for scientific analysis. Consult with a trained conservator.

Marking

1. Most pottery can be marked by writing on the internal surface of the sherd or vessel.
2. Use permanent black or white ink as appropriate to contrast with the surface colour.
3. Mark in small, legible writing on the surface of the sherd, not on fractured surfaces that may be joined together at a later stage.
4. Avoid marking over decoration, use-marks or surface residues.
5. Mark every sherd (that is big enough) with project and contextual unit identifiers. If it is required by the archive repository, additional information may include the year and the repository accession number.
6. Pottery that is a registered find (also known as a small find) must be marked with the registered find identifier.
7. Pottery recovered from soil samples must be marked with the sample identifier.
8. Pottery that cannot be marked directly, for example because it is too small, too friable or has been retained unwashed, should be packed as directed below.
9. Pottery must be marked before it is sent to a pottery specialist for analysis.

Packing

1. Pottery must be packed in polythene bags of appropriate size and strength. Do not cram sherds into bags of an unsuitably small size. Do not bag together large heavy sherds (such as stoneware) with small delicate sherds (such as porcelain).
2. Do not pack sherds that have been taped together. It is not advisable to tape sherds together at any stage other than during illustration and only then where the surfaces of the pot are hard enough to withstand the removal of the tape. Tape should never be left on sherds for any length of time.
3. Fragile sherds must be wrapped in acid-free tissue paper, bagged separately and if appropriate boxed separately for protection.
4. Polythene bags should be pierced to allow the contents to 'breathe'.
5. Only bag together pottery that is from the same contextual unit.
6. Write on the outside of the bag the site, contextual unit / indexed find / sample identifiers and any other information required by the laboratory or the repository.
7. Place two rot-proof labels in each bag, marked in permanent ink with the project and contextual unit / registered find / sample identifiers, as appropriate, together with any additional information required by the laboratory or the repository.
8. Metal fastenings, such as paper clips or staples, must not be used to secure bags because these will corrode and compromise other packing materials.
9. Store bags in contextual unit identifier order in suitably sized, robust cardboard boxes that meet the requirements of the repository. Do not pack boxes so full that pottery is in danger of being crushed, or the box lid is not secure. If bags are likely to move around inside the box during transit, pad the contents with a suitable material such as bubble wrap or acid-free tissue.
10. Mark boxes on one end using a permanent marker, or in temporary storage, a pencil, with the site identifier, the material type of the contents and the relevant contextual unit / registered find / sample identifiers. Boxes that will be transferred to a curatorial repository should be labelled or marked in accordance with their requirements.

Documentation

1. Pottery must be recorded as part of the finds documentation procedure.
2. Most pottery will be classified as a bulk find and the quantities present in each contextual unit should be recorded on bulk finds record sheets by material type (pottery), fragment count and weight in grams.
3. Pottery that is a registered find must be recorded in the registered finds index.
4. Pottery must be recorded in lists of finds recovered from soil samples.
5. Context and find records must be amended after assessment and analysis to include updated identifications. This might include, for example, changing a record from pottery to tile, or vice versa, or adding details of fabric or vessel types.

2.3 ASSESSMENT

Pottery analysis is often preceded by an assessment stage, which is designed to determine the appropriate level of analysis and reporting and to ensure that it is properly resourced, as well as providing basic information to inform other project tasks. It is often the case, however, that small assemblages do not require assessment because it is often easy to establish what level of recording is required. In such instances it is recommended that the project proceeds directly to analysis.

2.3.1 Aims

1. Establish the size and broad character of the assemblage.
2. Determine the level of analysis required.
3. Enable accurate estimation of the resources required for analysis.
4. Provide sufficient information about the pottery (often chronological) to facilitate other project tasks such as stratigraphic phasing.

2.3.2 Method

1. Assessment should only commence after all finds have been processed.
2. The entire assemblage must be assessed, including unstratified material.
3. The ideal approach is to layout as much of the assemblage as possible at a time, in contextual unit identifier order. The material can then be reviewed and a record made of the pottery in each contextual unit, as notes or in a more structured format, in either paper or digital form.
4. Avoid generating data ('intermediate' levels of data generation and analysis) that cannot be carried forward to analysis. Such work can consume significant project resources with no benefit beyond this initial assessment stage itself.
5. Avoid generating data that will be recorded more fully in analysis. There may be no need, for instance, to record individual ware or fabric types as detailed quantities, although it is usually helpful to record quantities of broad categories, such as ware groups (eg late medieval sandy).
6. The record should include:
 - the ware types present in each contextual unit
 - unusual vessel forms
 - comment on the condition of the pottery, where relevant, such as the degree of fragmentation or abrasion
 - the chronological range of the pottery in each contextual unit
 - an estimated date of deposition, usually a *terminus post quem*, for each contextual unit
 - an estimated date of creation for each feature
 - the quantity of pottery in each contextual unit, usually derived from the bulk finds record; it should not be necessary to carry out quantification during assessment.
7. Assessment also provides an opportunity to sort out finds that have been misidentified, such as fragments of tile that were originally recorded as pottery.

2.3.3 Results

1. A broad description and quantification of the pottery in every contextual unit.
2. The date range of the pottery in every contextual unit, based on the types present.
3. An estimated date of deposition for every contextual unit.
4. A written summary of the overall character and significance of the assemblage, highlighting groups that are of particular interest.
5. A discussion of the levels of analysis required for the overall assemblage and specific parts, such as key groups or site phases.
6. A written assessment of the potential of the pottery to address or contribute to the research aims of the project.
7. A written assessment of potential to address questions that relate specifically to the pottery, whether defined at the site assemblage level (eg what is the evidence for pottery production and how important is this within the socio-economic framework of the site?) or more widely (eg how does the present assemblage contribute to understanding of the regional distribution of ware x?).

8. A report that provides a detailed definition and quantification of component tasks for specialist analysis and reporting.

Once the potential has been established and resulting research questions defined, the scope and level of analysis required has to be determined. Specialist time and other resource allocations need to be made for all the necessary component tasks of recording, interpretation and reporting, including illustration and any additional specialist work such as scientific analysis.

2.4 ANALYSIS

Analysis is the process of recording pottery to the level of detail appropriate for interpreting the assemblage within the framework of the project and wider research aims. Not all assemblages will warrant detailed analysis and two levels of recording are set out below.

It is possible that some parts of an assemblage will merit detailed recording, while some can be recorded to a less detailed level. One purpose of assessment is to determine which level is most appropriate for the various groups represented in a pottery assemblage.

The Basic Record is the very minimum that is required to produce an informed interpretation of a pottery assemblage but it is recommended that this be enhanced by adding some of the other methods described in the Detailed Record (see below). A Basic Record may, for instance, also include fabric, as well as ware type characterisation.

The Detailed Record includes all aspects of a pottery assemblage that could be recorded to provide the maximum amount of information.

In every case the level of recording must be recommended by the pottery specialist and agreed with the project manager and other personnel as appropriate. The agreed level of recording has to be related to and consistent with the overall research aims of the project, whether as originally defined and/or as modified in the course of fieldwork.

All levels of analysis must be carried out or supervised by an experienced pottery specialist, as specified in the planning stage.

2.4.1 Before starting recording and analysis the project manager or post-excavation manager should:

- a. contact the identified pottery specialists to agree the post-excavation timetable and establish effective communication
- b. ensure that specialists have the information required to undertake an appropriate level of recording and analysis, on time and within budget; this should include:
 - the project brief and the project design, or the updated project design if a new version has been produced for the analysis and reporting stage
 - the stratigraphic matrix
 - updated structural and phasing information
 - a copy of the site database or other concordance of relevant structural information for every contextual unit, providing information on context type, context group, feature type, fill of, site sub-division and stratigraphic phase
- c. ensure that material sent to, and retrieved from, outside specialists is appropriately documented, packed, and transported
- d. establish who has responsibility for sending out and retrieving material for external specialists and who will cover the costs.

2.4.2 Prior to recording the nominated pottery specialist should:

- a. re-familiarise themselves with the agreed research aims and methods, as defined in the project brief and the project design
- b. re-familiarise themselves with the requirements of the Data Management Plan
- c. ensure that the recording method will be at the appropriate level for data to be analysed according to the project aims (eg more detailed analysis of firing for kiln assemblages) and depositional history of the site (eg more detailed recording of key stratigraphic groups), as well as for the interpretation of the assemblage in terms of pottery manufacture, distribution, acquisition and use
- d. agree the project timetable with the project manager, identify critical points where information is needed from the project manager or from other specialists, or where finds or data need to be sent to other specialists (eg in Samian pottery, stamped mortaria, scientific analysis or illustration)
- e. ensure access to relevant national, regional and site-based fabric and form series, using published literature and/or arranging visits to Pottery Type Series; travel and any access charges should be paid by the project, as agreed in the assessment
- f. locate and, where necessary, separate out material for analysis
- g. determine how the pottery will be packed after analysis, following the guidelines of the repository that will curate the project archive; it is usual for most of the pottery to be boxed in contextual unit identifier order but ensure that diagnostic material (eg fabric type sherds and illustrated sherds) can be easily re-located; decide also, in consultation with the repository whether or not to bag separately different wares or fabrics within each contextual unit
- h. ensure that material to be sent to other specialists, or returned to the project manager, is appropriately documented, packed, and transported (ClfA 2014 3.7.5)
- i. ensure that appropriate facilities, properly equipped, secure and with sufficient space and light, are available for undertaking the work (ClfA 2014 Annex 1).

2.4.3 During analysis the pottery specialist should:

- a. ensure the pottery record is in digital form, in a database or spreadsheet that is created and managed in accordance with the Data Management Plan
- b. ensure any codes used in creating the record (eg fabric codes, field names) are supported by a concordance of codes and full descriptive terms; this concordance should be in digital and paper form for inclusion in the project archive.

2.4.4 At the end of analysis the pottery specialist should:

- a. clean the digital record to even out any inconsistencies (eg in the varied use of capital letters within text fields, such as POTTERY, Pottery, pottery)
- b. provide documentation, compile metadata or clean the digital record to convert codes into full descriptive terms (eg ensure future users can understand that SVW OX1 means Severn Valley Oxidised ware 1).

2.4.5 Basic Record

This is a rapid analysis that is detailed enough to produce a report that will inform an understanding of the site and any structural evidence, as well as the significance of the pottery assemblage as evidence for site activities, modes of distribution, and social and economic conditions.

If the entire assemblage has already been assessed, unstratified material can be excluded from further analysis, although it should be available for study, eg to match cross-fitting sherds. If there

has been no assessment, unstratified material should be scanned to record the presence of unusual or significant types.

It is possible to produce a Basic Record for part of an assemblage, while selected groups are the subject of a Detailed Record (see 2.4.6). The Scan or Assessment exercise will identify which parts of an assemblage merit a Detailed Record.

Aims

1. Characterise an assemblage rapidly and in sufficient detail to produce a meaningful, publishable project report.
2. Quantify an assemblage rapidly and in sufficient detail to produce a meaningful, publishable report that could contribute to broad synthetic studies.

Method

Data must be recorded using consistent terminology, so that the same attributes are recorded in the same ways every time. The methods listed below are described in more detail in Appendix 1.

1. Characterise and sort the pottery according to these criteria:
 - contextual unit identifier
 - ware name, ware type or ware group (eg Ipswich ware, oxidised sandy ware, white ware, amphorae) in accordance with relevant local Fabric Type Series
 - full fabric identification may be appropriate at this basic level for some assemblages, especially for prehistoric material
 - ware date range (the earliest date and the latest date)
 - sherd type (rim, body, base etc)
 - vessel class (bowl, flagon, jar, jug etc)
 - vessel type, where appropriate (eg Samian forms)
 - vessel size (usually by rim diameter)
 - surface treatment (burnishing, glaze etc)
 - decoration (method and motif).
2. Quantify the pottery by:
 - sherd count
 - sherd weight in grams
 - number of vessels (eg Estimated Vessel Equivalent such as rim EVE based on rim percent; maximum vessel count; minimum vessel count).
3. Note specific features of the assemblage:
 - cross-fitting sherds from different contextual units and joins within context
 - evidence for use (sooting, limescale, wear marks etc)
 - sherd condition (abraded, water-worn, freshly broken).
4. Identify and separate pieces that require:
 - illustration or photography
 - scientific analysis.

Results

1. A digital Basic Record of the pottery in every stratified contextual unit.
2. Pottery selected for scientific analysis and/or illustration.

2.4.6 Detailed Record

The purpose of the Detailed Record is to provide as much information as possible about the character and quantity of the assemblage, to a level sufficient to inform site-specific, local, regional, national and international studies of pottery technology, distribution, acquisition, use and deposition through time, at the levels of specific fabrics, through ware types to traditions and styles. Detailed recording should also enable the comparison of the pottery with assemblages of other types of finds, as well as informing interpretations of the site, the character of specific features and contexts, and the structural sequence.

Aims

1. Characterise an assemblage in as much detail as possible.
2. Quantify an assemblage to as high a level as possible.

Method

The methods listed below are described in more detail in Appendix 1.

1. Characterise and sort the pottery according to these criteria:
 - contextual unit identifier
 - fabric type, in accordance with relevant Fabric Type Series
 - ware name/group to which that Fabric Type belongs
 - ware date range (the earliest date and the latest date)
 - sherd type (rim, body, base etc)
 - vessel class (bowl, flagon, jar, jug etc)
 - vessel form (carinated bowl, pear-shaped jug etc)
 - the form of component parts (rims, bases, feet, handles, spouts etc)
 - vessel size, by rim diameter, height (for complete profiles), and if it adds useful information, base diameter
 - vessel wall thickness and girth are recorded for prehistoric pottery
 - surface treatment (burnishing, glaze etc), by technique, character (eg glaze colour) and position on the vessel; for glaze also record whether it is splashed, run or covers the whole surface
 - decoration, by technique, motif, and position on the vessel (where this is not already defined by the form/sherd type)
 - non-decorative deliberate modifications such as potter's stamps, post-firing tally/merchant marks, graffiti or repairs
 - method of manufacture (handbuilt, moulded, wheelthrown), where not defined by the fabric type/description
 - evidence for use (sooting, limescale, wear marks etc)
 - cross-fitting sherds from different contextual units and joins within the same context
 - sherd condition (abraded, burned, water-worn, freshly broken).
2. Quantify the pottery by:
 - sherd count
 - sherd weight in grams
 - number of vessels (eg Estimated Vessel Equivalent or EVE, maximum vessel count, minimum vessel count; see Appendix 1)
3. Identify and separate pieces that require:
 - illustration or photography
 - scientific analysis.

Results

1. A digital Detailed Record of the pottery in every selected contextual unit.
2. Pottery selected for scientific analysis and/or illustration.

2.5 REPORTING

The reporting stage includes using the recorded data to inform particular lines of enquiry, presenting the results of that analysis and writing text that describes the processes and results of data-gathering, analysis and interpretation.

A pottery specialist has an obligation to disseminate the results of their analysis and research within the profession, presenting their results in such a way that the data are easily accessible for use in wider studies and the conclusions can be re-worked by other researchers. A published report should consist of descriptive text, tables and illustrations and clearly relate to the material archive in order to facilitate access to pottery for future researchers. The ceramic specialist is encouraged to write further notes, syntheses and research articles.

2.5.1 Before reporting begins the project manager must:

- a. ensure the pottery specialist has a copy of the latest version of the project design
- b. ensure the pottery specialist is aware of the timetable and deadlines for completing the report
- c. ensure the pottery specialist has all the information required to interpret the assemblage, including site structural details (eg final site matrix and phasing), results of analysis of associated assemblages (eg ceramic building material, clay pipes, coins), the absolute dates (eg from radiocarbon analysis) of any contextual units
- d. ensure the pottery specialist has copies of all pottery illustrations
- e. ensure the pottery specialist has the data resulting from analysis elsewhere, eg by a Samian specialist or from scientific analysis.

2.5.2 Before reporting begins, the pottery specialist should:

- a. ensure that they have been provided with all the information they need, as listed in 2.5.1
- b. ensure that the report is created in digital form in accordance with the Data Management Plan
- c. liaise with scientific analysts over the requirements for reporting and making the results available
- d. liaise with illustrators over specific requirements.

2.5.3 Scope

The scope of the report will depend on the project design and what was outlined as an outcome at the scan or assessment stage. Depending on the size and character of the assemblage it may not be appropriate to describe fully every attribute and some assemblages will be so small, or so re-deposited in nature, that it is impossible to make profound interpretations. The report should therefore reflect the wider project aims.

If it is not intended that the overall project will produce a published report, the pottery specialist is encouraged actively to find an alternative method of dissemination, such as a journal article or online source. If the decision is made to produce a synthetic or integrated report then an associated specialist

report should also be produced for the project archive, to be made available through online resources such as the Archaeology Data Service, the project website or other digital media.

2.5.4 Sources

A report should identify and reference:

- a. any standards and accepted methodologies used in the analysis, recording and interpretation of the pottery
- b. accepted typologies and type series used to characterise the pottery
- c. key assemblages used to uphold or enhance the characterisation and interpretation of the pottery
- d. published reports or research articles that have informed the interpretation of the assemblage
- e. relevant national, regional, period and pottery research frameworks.

2.5.5 Content

The pottery report should include any or all of the following, as appropriate:

- a. an introduction to the nature of the assemblage, including total quantities
- b. the aims of the report
- c. a description of the recording system used, including where different levels of analysis have been applied to different parts of the assemblage
- d. a description of any sampling strategy or method of recovery employed
- e. the methods of analysis employed
- f. the method of quantification employed
- g. full integration of any scientific analysis
- h. description of fabric types and/or ware types, depending on the level of analysis employed
- i. description of the vessels present in each fabric/ware type, including where possible:
 - methods of manufacture
 - form types
 - surface treatment
 - decoration
 - size ranges
 - evidence for use.
- j. discussion of evidence for pottery disposal and site formation processes, based on sherd condition and fragmentation
- k. a detailed discussion of the assemblage in its own terms, including the relative proportions of different fabrics, wares and vessel types of different dates
- l. a discussion and assessment of the assemblage in its local, regional and wider economic and social context
- m. a discussion of the assemblage as evidence for the way of life represented at the site over time, including how pottery was obtained and utilised
- n. references to other finds from the site and a discussion of the significance of the pottery alongside objects made of other materials
- o. an illustrated catalogue
- p. photographs or other illustrations of individual vessels or groups
- q. tabulated data and, where appropriate, graphs
- r. bibliographic references
- s. acknowledgements
- t. if necessary, for instance if it is not mentioned elsewhere in the publication, the location of the archive, including scientific specimens.

2.5.6 Dissemination

Pottery reports are often presented as separate sections or chapters within site or project reports. The pottery specialist must be consulted during any editing of their original text. The pottery specialist must also be notified of the publication of the project, whether in physical or digital form, and sent copies of the published material.

If passages of the full report are used to compile an integrated pottery or finds report, the pottery specialist must be consulted to ensure the content accurately reflects their original text and they should be paid for making any amendments that are required.

Authorship must be credited to the pottery specialist throughout.

Copyright laws and regulations must be observed throughout and copyright should be agreed between the commissioning body and the pottery specialist.

2.6 ARCHIVE

The pottery assemblage is one component of a larger project archive that as a whole will be subject to recognised standards and requirements for management and compilation (Brown 2011; Perrin 2014; ClfA 2014b). Those standards should be used to inform project planning and the subsequent treatment of all potential archive components, including pottery and associated documents and digital material.

It is recognised that selection is an important part of the creation and compilation of an archive. Selection is the process of deciding which components of the documentary and material elements are to be retained for curation. This can result in omitting certain items from the archive, such as duplicates of digital files, or some unstratified objects. It is not the function of the Standard to describe the creation and development of a selection strategy, nor to state categorically what pottery finds can or cannot be excluded from selection. Selection should be based, however, on the premise that every pottery find has the potential to inform future research and a strong case has to be made for not selecting pottery for archive. Pottery specialists may be able to inform the selection process, and it is important to consult them, but their role is essentially to report on an assemblage to the best of their abilities, in the knowledge that future researchers will be able to revisit and reinterpret the material they have studied. It is therefore advised that in most cases, pottery that has been analysed, or has the potential to reward analysis or re-analysis, should be selected for archive.

The following principles apply to all archaeological archives but are worth considering here in relation to pottery.

Archiving is a continuous process throughout the course of a project and includes activities, such as cleaning and marking, that take place at different times but with the long-term aim of ensuring the security and accessibility of the material in long-term curation. Archiving requirements can therefore follow the same structure as a project and are thus arranged here under the headings of project planning, data-gathering, analysis, reporting and archive transfer.

2.6.1 Project planning

As described in Section 1, the key to successful archiving is to address the issue in project planning. It is at that stage that recovery and recording methodologies, selection strategies, data management plans and repository requirements should be agreed and understood, incorporated into project designs/WSIs and transmitted to specialists.

2.6.2 Data-gathering

Follow agreed standards, methods and materials for the recovery, cleaning, marking/labelling, packing and documentation of pottery, including:

- a. consulting with a conservator when lifting fragile objects, or whole pots that require specialist intervention
- b. identifying finds that will not be subject to general cleaning, eg pottery fragments selected for residue analysis
- c. cleaning pottery to recognised standards, using methods described in nationally recognised advisory documents (eg First Aid for Finds)
- d. using permanent ink and rot-proof materials for marking and labelling
- e. packing finds to ensure that pottery from the same contextual unit is kept together, while material from different contexts is separated
- f. documenting the basic quantities of the pottery assemblage to enable management of the material during analysis, especially if the pottery is to be sent off-site to an external specialist
- g. storage of pottery in locations and conditions that minimise the risks of damage, deterioration and theft.

2.6.3 Analysis

The analysis stage is one where pottery can be sent to a variety of different specialists in several locations. It is important that this is managed to ensure the ongoing stability and security of the material and the successful collection and integration of the results.

1. Document the movement of pottery to ensure that its whereabouts is known at all times.
2. Ensure that specialists and scientific analysts comply with recognised standards of object care.
3. Type series and specimens created during analysis must be included in the project archive.
4. The task of transporting pottery must only be entrusted to project staff or professional carriers qualified in the movement of fragile goods.
5. All records and reports created during analysis, including digital material, must be submitted for inclusion in the project archive.

2.6.4 Reporting

Specialist pottery reports often take one of two forms. One is a separate document written by the analyst as a full description and interpretation of the data they have collected, the other is a chapter or section within a larger project report, often accompanied by drawings and photographs. Sometimes the full specialist report is incorporated into the project report; sometimes it is abbreviated or re-written. In either case it is highly likely that the full specialist report has been created digitally and it must be included in the project digital archive in order to remain accessible for further study. Project managers, or post-excavation managers, must ensure that external specialists submit all their data, associated glossaries or keys, versions of their report and any other relevant material. Archive components resulting from the reporting stage that must be incorporated into the project archive include:

- a. a clean copy of the data recorded by the specialist; this will usually be in the form of a digital file, either a spreadsheet or database
- b. a concordance of all the codes used during recording and their meanings
- c. selected copies of drafts, together with the final version, of the full specialist report; it is worth considering retaining some early draft reports if these further illuminate the process of arriving at the final interpretations

- d. original versions of all drawings, which are likely to be in ink, on card or film, and must be included in the documentary archive
- e. original versions of all photographs: negatives or transparencies will be incorporated into the documentary archive but most publication photographs are now likely to be digital, and the original file, in .tiff or raw format, must be included in the digital archive; it is not acceptable to assume that photographs incorporated into document files, such as .pdfs, will be archived in that form
- f. the publication version of the specialist report, especially if this has been created as a separate file for later incorporation into the final project report.

2.6.5 Archive compilation

This is the stage when documentary material and finds are packed, and the digital archive organised, for transfer to an archive repository. This will usually be carried out to standards that should have been agreed during project planning. The principal tasks are usually to:

- a. ensure that archive selection of finds, documents and digital files has been completed in accordance with the selection strategy and the requirements of archive repositories; the aim is to create an archive that will inform future study
- b. ensure finds are packed by contextual unit, in secure bags that contain rot-proof labels marked with the site and contextual unit identifiers
- c. ensure boxes of the size required by the repository are used and labelled in accordance with their system
- d. ensure finds are boxed in contextual unit identifier order
- e. ensure specimens created for scientific analysis, eg thin-section slides, are included in the archive, or their location (eg in a laboratory instead of a museum store) is fully documented
- f. establish whether or not it is required that illustrated or scientifically analysed specimens should be boxed separately and respond accordingly
- g. compile a box list to enable access to particular finds
- h. compile documents by type (record sheets, indexes etc) and bundle them in a logical order (eg arrange individual record sheets in order of contextual unit)
- i. box documents by type in boxes of the size required by the repository
- j. order photographic items in a logical and accessible way (eg by photographic index number)
- k. use recognised archival materials for the packing and storage of photographic materials, including prints, negatives and transparencies, as specified in national and international standards
- l. the archive must include indexes to all the documentary material and an overall contents list
- m. ensure all digital data has been cleaned to be consistent and free from error
- n. ensure all digital files are named in accordance with the convention agreed in the Data Management Plan
- o. follow the requirements of the Data Management Plan in ordering digital material in a clearly identified and accessible directory structure
- p. compile a digital archive index to accompany the digital archive
- q. copy the digital archive onto transfer media as specified by the Trusted Digital Repository.

2.6.6 Archive transfer

It is most likely that the entire project archive will be transferred together, and the pottery, with associated records, will be a component of that. In all cases, however, archive transfer must be pre-arranged with the repository and carried out by project staff or recognised professional carriers who specialise in the delivery of fragile goods for museum collections.

3 GLOSSARY OF TERMS

Archaeological project any programme of work that involves the collection and/or production of information about an archaeological site, assemblage or object in any environment, including in the field, under water, at a desk or in a laboratory. Examples of an archaeological project include: intrusive projects such as excavation, field evaluation, watching brief, surface recovery and the destructive analysis of objects; non-intrusive projects such as landscape or building survey, aerial survey, remote sensing, off-site research such as desk-based assessment and the recording of objects or object assemblages. The re-investigation of archives in curatorial care also constitutes an archaeological project (Perrin *et al* 2014).

Context or Contextual unit a single stratigraphic or surveyed unit recorded separately in the field; eg an excavated deposit or feature, a grid square for surface collection.

Ceramic type series (CTS) a defined typology of ceramic types (usually fabrics) that have been identified as being most common in a local or national setting.

Diagnostic a pottery type or form that is characteristic of a particular time period (chronologically diagnostic), product (typologically diagnostic) or culturally defined area (culturally diagnostic).

Data Management Plan (DMP) a plan for the management of digital data throughout the course of a project that includes procedures for data types, formats, standards, access, data storage, preservation and resourcing.

Fabric the identifier given to a type of pottery that has been characterised by the substance it is made from, ie the clay and inclusions. Fabrics are usually denoted by codes, either as a unique number or as combinations of characters and numerals.

Form the shape of a pottery vessel or component thereof.

MPRG The Medieval Pottery Research Group www.medievalpottery.org.uk.

PCRG Prehistoric Ceramic Research Group www.pcr.org.uk.

Pottery assemblage all the pottery collected during an archaeological project.

Pottery type series (PTS) a reference collection of specimens of every pottery fabric identified within a specific area, accompanied by a descriptive catalogue.

Project brief a document that sets out the scope, aims and rationale for an archaeological project, usually with the purpose of informing the development of a project design or written scheme of investigation.

Project design also the written scheme of investigation; the document that includes a description of the scope, aims, objectives, tasks, strategies and methods of a project, the personnel involved and the timetable.

Project executive the person who instigates or commissions an archaeological project, often in either a planning role or through a funding agency, and has a primary role in determining the aims and frame of reference.

Project manager the person who manages the project and the project team.

Project team the people who collectively work with the project manager throughout the course of the project, agreeing the project design and strategies for the completion of project tasks.

SGRP Study Group for Roman Pottery www.romanpotterystudy.org.

Transfer of Title the means by which ownership of archaeological finds is passed onto another person or institution, usually a museum: applicable in England and Wales and centrally organised in Scotland and Northern Ireland.

Vessel class a broad term used to characterise the overall form of a pot; eg bowl, jar, jug.

Vessel type a more specific way of classifying the overall form of a pot; eg carinated bowl, globular jar, pear-shaped jug.

Ware group a group of ware types that has been assigned a collective name, such as high medieval glazed sandy ware.

Ware type a type of pottery that is defined by a fabric or group of fabrics; eg Black-burnished ware or post-medieval redware.

Waster a pot rejected after failure during firing (eg by melting, exploding, fragmenting).

Waster dump a dump of pottery wasted in the kiln. These can comprise very large numbers of sherds, especially in industrial period contexts, leading to revised fieldwork strategies (see Historic England 2015).

Watching Brief the monitoring of development works by an archaeologist.

Written Scheme of Investigation (WSI) see Project Design.

4 REFERENCES

- Brock, F, Higham, T, Ditchfield, P and Ramsey, C B, 2010 *Current Pretreatment Methods for AMS Radiocarbon Dating at the Oxford Radiocarbon Accelerator Unit (ORAU)*, Radiocarbon **52**, 103-112
- Brown, D H, 2011 *Archaeological Archives. A guide to best practice in creation, compilation, transfer and curation*, AAF
- ClfA, 2014a *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*, http://www.archaeologists.net/sites/default/files/ClfAS&G Finds_1.pdf
- ClfA, 2014b *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*, http://www.archaeologists.net/sites/default/files/ClfAS&G Archives_2.pdf
- Collett, L, 2012 *An introduction to drawing archaeological pottery*, IfA Professional Practice Papers No 10
- Darling, M J, 1994 *Guidelines for the archiving of Roman pottery*, SGRP Guidelines Advisory Document 1
- Doherty, A, 2015 *Using archaeological archives: a case study of finds from Roman Essex*, SpoilHeap Publications
- Dunbar, E, Cook, G T, Naysmith, P, Tripney, B G and Xu, S, 2016 *AMS ¹⁴C Dating at the Scottish Universities Environmental Research Centre (SUERC) Radiocarbon Dating Laboratory*, Radiocarbon **58** / **FirstView** Article / January 2016, pp 1 – 15 DOI: 10.1017/RDC.2015.2, Published online: 11 January 2016
- Green, C, 1987 *Drawing Ancient Pottery for Publication*, Association of Archaeological Illustrators and Surveyors Technical Paper 3
- Haggarty, G, Hall, D and Chenery, S, 2011 *Sourcing Scottish Redwares*, MPRG Occasional Paper No 3, Perth, Scotland
- Historic England, 2015 *Archaeological and Historic Pottery Production Sites. Guidelines for best practice*, Historic England
- Historic England, 2015 *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide*, Historic England
- Historic England, forthcoming *Organic Residue Analysis and Archaeology: Guidance for Good Practice*, Historic England
- Hurman, B and Steiner, M (eds), 1997 *Aspects of Illustration: prehistoric pottery*, Association of Archaeological Illustrators and Surveyors Technical Paper No 13/Prehistoric Ceramics Research Group
- Irving, A, 2011 *A Research Framework for Post-Roman Ceramic Studies in Britain*, MPRG Occasional Paper 6
- Medieval Pottery Research Group, 1998 *A Guide to the Classification of Medieval Ceramic Forms*, MPRG Occasional Paper 1

- Orton, C, 1993 *How many pots make five? An historical review of pottery quantification*, Archaeometry **35** (2)
- Orton, C, Tyers, P, and Vince, A, 1993 *Pottery in archaeology*, Cambridge University Press
- Orton, C and Hughes, M, 2013 *Pottery in archaeology*, second edition, Cambridge University Press
- Peacock, DPS, 1977 *Pottery and Early Commerce*, Academic Press, London
- Perrin K, et al, 2014 *A Standard and Guide to Best Practice for Archaeological Archiving in Europe*, EAC Guidelines 1 <http://archaeologydataservice.ac.uk/arches/Wiki.jsp?page=The%20Standard%20and%20Guide%20to%20Best%20Practice%20in%20Archaeological%20Archiving%20in%20Europe>
- Perrin, R, 2011 *A Research Strategy and Updated Agenda for the Study of Roman Pottery in Britain*, Study Group for Roman Pottery Occasional Paper 1
- Prehistoric Ceramics Research Group, 2010 *The Study of Prehistoric Pottery. General Policies and Guidelines for Analysis and Publication*, PCRG Occasional Papers 1 and 2 (third edition), Salisbury: Wessex Archaeology
- Prehistoric Ceramics Research Group, 2016 *Prehistoric Ceramics Research Group Research Framework: Agenda and Strategy*, PCRG Occasional Paper 7, Salisbury: Wessex Archaeology
- Slowikowski, A, Nenck, B and Pearce, J, 2001 *Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics*, Medieval Pottery Research Group, Occasional Paper 2
- Tomber, R and Dore, J, 1998 *The national Roman fabric reference collection: a handbook*, MoLAS Monograph 2
- Vince, A, 2010 *United Kingdom Thin Section Database* http://archaeologydataservice.ac.uk/archives/view/alanvince_eh_2010/downloads.cfm?archive=tsdb.
- Watkinson, D and Neal, R, 2001 *First Aid for Finds*, RESCUE
- Webster, G, 1976 *Romano-British coarse pottery: a student's guide*, CBA Research Report 6, London
- Whittle, A, Healy, F and Bayliss, A, 2011 *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland*, Oxford: Oxbow Books pp 38-39 and fig 2.24

5 ACKNOWLEDGEMENTS

Rosy Szymanski acted as Project Assurance Officer for Historic England, providing good advice as well as helping to check the text. Derek Hall (Archaeologist and Ceramic Specialist) managed the project as Project Executive and deserves credit for his input, and thanks for his hard work. Thanks also to Maria Geals for her excellent design.

Thanks to the following people, who provided valuable comments during consultation: Pim Allison, Joanna Bird, Andrew Birley, Paul Blinkhorn, Diana Briscoe, Sarah Colley, Chris Cumberpatch, David Dawson, David Dungworth, Julie Edwards, Geoffrey Dannell, Gill Dunn, James Gerrard, Andrew Hammon, Peter Hinton, Tim Howard, Jacqui Huntley, Barbara Hurman, John Lawson, Ruth Leary, Edmund Lee, M Leivers, Vibeke Martens, Maureen Mellor, Lorraine Mephram, Phil Mills, Elaine Morris, Martin Pitts, Mark Ruddy, Michael Russell, Peter Slaughter, Sue Stallibrass, Laura Templeton, Colin Wallace, Margaret Ward.



APPENDIX 1 APPROACHES TO ANALYSIS

The following attributes may be recorded during analysis: fabric and vessel type, the form of component parts, sherd type, decoration, surface treatment, vessel size, source, method of manufacture, evidence for use and condition.

The advised method is to sort every sherd in a contextual unit according to each different attribute, so that one may end up, for example, with a pile of plain body sherds of Fabric 1, two plain everted rim sherds in Fabric 1 with the same rim diameter, a body sherd in Fabric 1 that has an incised wavy line on the body, a pile of plain body sherds in Fabric 6, a pile of body sherds in Fabric 6 that have an internal clear glaze, and so on.

A3.1 FABRIC TYPE

The purpose of fabric characterisation is to determine the likely location of the production site at which that product was made.

Pottery fabrics should be distinguished on the basis of the character of the clay and inclusions, in accordance with accepted methods (Orton and Hughes 2013). Reference must always be made to existing, relevant, local, regional or national Pottery Type Series or PTS (ClfA 2014a, 3.7.4) and their terminology and coding systems should always be followed. Concordance must be provided where more than one appropriate fabric series exists (eg local and national).

Previously unrecognised fabrics or significant variations of known fabrics must be added to any actively curated PTS, with specimen sherds offered, and specimens selected for petrographic/chemical analysis, as agreed in the updated project design. New fabrics must be described in full.

If specimen sherds have been removed from the stored assemblage, proxy documentation must be left in the original box or bag to show that the contents are incomplete.

Where no appropriate PTS exists, a project specific series should be compiled. Specimen sherds of each type, supported by full written descriptions, must be set aside and reserved in the archive. Fabric descriptions, both macroscopic and microscopic (X10 or X20), should be recorded in standard format (PCRG 2010, 22-29, Appendix 1-8; Tomber and Dore 1998, 4-8; Orton and Hughes 2013). Concordance must be provided with appropriate regional or national fabric series where possible.

Fabric recording systems should allow for fabrics to be grouped and quantified by broad class, whether based on main inclusions (eg flint, grog etc for Prehistoric pottery) or general type (eg oxidised, reduced, colour-coated, blackware, tin glazed etc). This can be achieved using an alpha-numeric system (PCRG 2010, Appendix 1 and various county/unit-specific fabric type series) or by recording fabric class separately. This hierarchical approach facilitates inter-regional comparison (Doherty 2015, 21) and also allows for different levels of recording to be undertaken, as/where appropriate. Where practical, fabrics should be defined in consultation with local geology maps for a 10 km radius, to identify local clays and tempers.

Petrographic analysis should be used for checking and refining fabric descriptions determined with a binocular microscope.

A3.2 VESSEL FORM

The aim of form analysis is to define the vessel type and component parts.

All recognisable form of vessels and component parts must be recorded within fabric groups by contextual unit.

Where appropriate, use the Guide to the Classification of Medieval Ceramic Forms (MPRG 1998) at all stages of analysis. This classification provides a nationally accepted standard terminology for medieval and early post-medieval forms, avoiding confusion and facilitating inter-site and inter-regional comparison.

Record vessel types using a hierarchy of:

- vessel class (eg bowl, jar, jug etc) **must** be recorded
- vessel type (eg carinated bowl, rounded jar, ring-necked flagon etc) should be recorded where possible.

Form type codes must conform to extant local/regional Form Reference Series. Where these exist and are published, and forms are well defined, detailed form descriptions are not required. Concordance may need to be provided if more than one appropriate form type series exists (eg local and national).

Form elements (eg rim, base, handle) must be recorded for new types or for kiln assemblages.

A3.3 DECORATION

Decoration and form are closely related, given that the type of vessel usually determines the nature and positioning of the decoration.

Decoration is usually carried out before firing, and can be divided into three components:

- technique (eg incised, impressed, applied)
- motif (eg wavy horizontal lines, cross-shaped, scales)
- position (eg on the rim, body, handle).

Each of these should be recorded in separate fields on a record sheet, spreadsheet or database.

Standard terminology should be used, where this exists (PCRG 2010, 33; MPRG 1998; Webster 1976).

A3.4 VESSEL SIZE

Vessel size is usually determined by measuring the external diameter of the rim in millimetres. The hand-built nature of the majority of prehistoric pottery (particularly of the Neolithic and Bronze Age) means that rim circumference can be irregular, and a minimum and maximum diameter may need to be recorded.

Bases are not usually typologically sensitive, so diameters of bases only need to be recorded where this is justified by the project aims and objectives (for example in a kiln assemblage where this might help to characterise the range and level of standardisation of kiln products).

Vessel height should be recorded when a total profile is present.

Girth and vessel wall thickness are usually recorded only for prehistoric pottery (PCRG 2010, 32-3).

A3.5 SURFACE TREATMENT

Surface treatment is recorded for any techniques that are carried out before firing and includes the use of a slip or glaze, wiping, burnishing, knife-trimming, finger smearing, scratch-marking etc.

As with decoration, it is advisable to record the technique and the position separately.

Some fabrics are differentiated on the basis of their appearance (eg cream-slipped ware, Black-burnished ware), in which case it is not necessary to record surface treatment.

A3.6 EVIDENCE FOR MANUFACTURE

Methods of manufacture include:

- vessel manufacture (eg handbuilt, wheelthrown, moulded), although this is often included in the description of a fabric, so need not be recorded separately
- forming and attaching component parts (eg pulled rod handle, luted wheel-thrown strap handle)
- manufacturing faults (eg warping, bloating, cracking).

A3.7 EVIDENCE FOR USE

The ways a vessel was utilised can leave evidence such as wear marks, leaching and residues (eg soot, limescale, food deposits).

Record both the position (including whether internal or external) and extent of evidence for use.

A3.8 POST-FIRING MODIFICATIONS

Elements such as graffiti, tally marks, ownership marks, perforations and repairs should all be recorded by their position and technique. Lettering should also be transcribed into the record.

A3.9 QUANTIFICATION

The aim of quantification is to determine the relative amounts of each different type, sorted according to the attributes described above, that are present in a single contextual unit. This will lead to an understanding of which types are prevalent in specific features and structural phases as well as across the site as a whole. The aim is to enable the investigation and comparison of the populations of different pottery types in order to inform questions of chronology, use, social and economic conditions and site formation processes.

As noted by Orton, Tyers and Vince in 1993 (166), 'This is a subject which has often generated more heat than light in recent years.' This statement remains true more than 20 years later. Varying approaches have been used by different period specialists as well as those working within the same period, sometimes even within the same region (Doherty 2015, 9). However, this is an area where consistency, at least within period specialisms, is required if meaningful comparison between site assemblages is to be achieved. The level of quantification will depend on the aims and objectives of the project, balanced with the condition of the assemblage and the character of the archaeological

deposits. Cost and time should not be the determining factor and adequate time should have been agreed for the appropriate level of quantification; in fact more time is actually spent on the initial sorting than on recording (Darling 1994, 4).

The main methods of quantification are:

- sherd count – to the nearest sherd, not in estimated quantities of fives or tens; count freshly broken sherds as one
- sherd weight – to the nearest gram
- vessel count – usually an estimate. It is often helpful to use two methods (see below), such as Rim EVE together with Maximum Vessel Count, to give a more informed estimate of the vessel population. Rim EVE will often give an estimated vessel count that is much lower than the Maximum Vessel Count.

Vessel counts can be acquired in a number of ways. An actual count is highly unlikely, especially in large assemblages but can occasionally be achieved on sites such as shipwrecks, where pots may be easier to identify separately.

The usual method is to calculate an Estimated Vessel Equivalent (EVE) based on rim percentage, recorded using a rim chart (Orton and Hughes 2013). Bases can also be measured to provide a Base EVE, although this is usually only appropriate on pottery production sites, where there are large amounts of material to be quantified.

In prehistoric assemblages it is not always possible to produce Rim and Base EVEs because pots are not always entirely regular in form and other methods of acquiring an estimated vessel count may be more appropriate.

It is possible to produce a Maximum Vessel Count, where every sherd counts as one vessel unless it either fits with another sherd, or is demonstrably part of the same vessel as other sherds. This often becomes apparent during sorting without too much extra effort. If two sherds do join together, they count as one vessel.

Other objective methods for quantifying vessels have been proposed, each with advantages and disadvantages (Orton, Tyers and Vince 1993, Chapter 13; Orton 1993). It is most important that there is clear, consistent guidance from specialist groups on the agreed approach for each period.

A3.10 DATE

For some assemblages, the earliest date (*terminus post quem*) and latest date (*terminus ante quem*) of a given type, as differentiated during sorting, may be recorded. Sherds that, given the character of the rest of the pottery in the context, can be identified as residual or intrusive, should be noted, to assist in understanding depositional processes and the reliability of pottery groups.

A3.11 ADDITIONAL INFORMATION

Additional information to be recorded includes:

- cross-context joins, where two sherds from different contextual units fit together
- evidence for re-use, such as turning pottery sherds into spindle whorls, counters or lids
- sherd condition, recorded in terms of type, position and extent, provides evidence of breakage and post-deposition activity; such evidence includes abrasion, burning, leaching or being water-worn.

A3.12 SHERD SELECTION

Record which sherds or vessels have been selected for further treatment, such as drawing, photography or scientific analysis.

A3.13 COMMENTS

Observations or notes that do not relate to the sorting of pottery for quantification may be recorded in a free text field.

A3.14 THE RECORD

In the past, specialists would record onto paper pro forma, which more recently have been entered into digital databases, but it is now common practice to enter data directly into a database or spreadsheet. In either instance, it is essential that all codes used to denote fabric or form types, or any other attribute, are listed in a glossary or concordance that provides the full meaning.

Recorded data should be accessible to other people and steps must be taken to ensure that it remains so. It is advisable to follow guidelines provided by the Archaeology Data Service (<http://archaeologydataservice.ac.uk/>).



APPENDIX 2 APPROACHES TO REPORTING

The aims of producing a report on any pottery assemblage must be to describe it, quantify it and interpret the results of analysis. The contents of a pottery report are set out in section 2.5 of the Standard but some aspects are given further explanation here.

A4.1 DESCRIBING THE ASSEMBLAGE

All the attributes on which the assemblage was sorted must be presented, with the range of wares, fabrics, vessel forms and decorative styles.

The assemblage should be described in a catalogue, accompanied by illustrations (drawings and/or photographs). The catalogue should be representative of the whole assemblage, covering characteristic traits, and giving the range of forms and types present. It should be arranged to complement the text and any phasing/stratigraphic grouping. The extent of the catalogue will depend on the rarity and importance of the material described.

Most catalogues are arranged around the following:

- ware and/or fabric types
- form types
- key feature/context groups.

The catalogue should present key attributes (contextual unit, type, form, fabric, decoration, surface treatment, sample reference eg, lipid residue, object or pottery record number) in a standardised format with any abbreviations/codes explained in full in a key. Where an illustrated sherd has been used for petrographic or scientific analysis the sample reference should be given in the catalogue. If the sherd or an attribute has been photographed then the appropriate illustrative plate should be cross-referenced.

All the terms used in descriptions of fabrics, forms, decoration and other attributes must be used consistently, and if necessary explained in glossaries or concordances.

Fabrics must be described with reference to other known examples or type series, using the accepted nomenclature. Full descriptions of previously unpublished fabric and form types should be given following accepted principles (eg PCRG 2010, Darling 1994 and Slowikowski *et al.* 2001). Where a new type series is defined, it may be appropriate to give a correlation with previously used typologies. Fabric descriptions should be presented in standardised form following period group guidance (see PCRG 2010). Where petrological analysis has taken place then the results should be integrated, cross-referenced and the sample reference stated. Petrological descriptions should follow standard practice (PCRG 2010; Peacock 1977).

Vessel forms and the form of component parts, decoration or surface treatment should all be described using accepted terminology and systems of classification (eg MPRG 1988).

Other attributes, such as surface treatment, evidence of use, signs of modification and methods of manufacture should be described, quantified and discussed in the context of other attributes. If considered appropriate, specific examples should be illustrated.

The results of scientific analysis for use should be integrated with other lines of evidence for the same phenomena, eg when using lipid analysis to identify food residues.

The condition of the material should be described, leading to examination of the evidence relating to fragmentation, re-deposition, and waste management and site formation processes. A statement covering the overall stratigraphic integrity of the assemblage and its reliability to date features should be given, in particular where material is thought to be residual, intrusive and/or where cross-joins have been recorded between features.

A4.2 QUANTIFICATION

Methods of quantification must be described in an introductory section on methodology. The methods and rationale used for measuring and estimating vessel size, diameter, wall-thickness and volume should be stated and referenced.

The total number (excluding fresh breaks) and weight of sherds, and average sherd weight should be clearly stated in the report along with the number of recognised vessels and the method used to calculate vessel counts.

Tables should be used to present a proportional breakdown of the assemblage by key attributes by site sub-division, phase and stratigraphic groupings. Presenting data in a standardised tabulated format enables direct comparison to be made between assemblages.

A4.3 DISCUSSION

The discussion should address those questions outlined in the assessment and stated in the introduction to the report.

Common themes for discussion include:

- the technology of pottery making and the organisation of industries
- the range of sources for pottery
- modes of local, regional, national or international exchange or trade
- modes of acquisition
- the chronology of pottery use and disposal
- patterns of pottery distribution across the site
- ways of utilisation and consumption
- comparisons with other assemblages
- site formation processes and taphonomy
- the character of certain stratigraphic or structural components (eg site phases, areas of the site or individual features)
- the character of the site or what it represents (eg a dwelling, industrial zone etc).

The discussion should place the assemblage in its wider local and regional context.

A4.4 ILLUSTRATIONS

Illustrations should be produced at an appropriate scale and to an acceptable standard (see Green 1987; Hurman and Steiner 1997; and Collett 2012).

A4.5 ACKNOWLEDGEMENTS

The location of scientific specimens, pottery type series, records and the archive (paper and digital) should be clearly stated in the publication. The illustrator and photographer should be credited along with the names of individuals and organisations involved in scientific research.

